DOCUMENT RESUME

ED 143 904 CG 011 670

AUTHOR De Csipkes, Robert A.; Rowe, Wayne
TITLE Automated Versus Conventional Systematic Desensitization: A Study of Comparative Effectiveness.
PUB DATE Apr 77
NOTE 15p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, N.Y., April 4-8, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Adaptation Level Theory; *Anxiety; *Arousal Patterns; Behavior Change; *Desensitization; Individual Psychology; Personality; *Psychophysiology; Research Projects; *Stimulus Behavior

ABSTRACT

This study investigates whether variations in method of presentation of anxiety items (experimenter's voice, experimenter's taped voice, subject's taped voice) will result in differences in autonomic arousal (as measured by self-report, galvanic skin response, cardiac rate, blood pressure). Ss were 24 Naval Academy midshipmen. The procedure involved (1) training in deep muscle relaxation, and (2) measuring arousal following the presentation of anxiety-eliciting stimuli. Statistical analysis indicated that the influence of method of presentation was significant for galvanic skin response and self-reported anxiety. Comparison of cell means showed that verbal presentations were more effective in eliciting autonomic arousal than taped presentations. The results of this study provides partial evidence to support the conventional form of systematic desensitization as more effective than the newer automated or taped versions. (Author)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED143904

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Automated Versus Conventional Systematic Desensitization: A Study of Comparative Effectiveness

Robert A. de Csipkes

United States Naval Academy

Wayne Rowe

University of Oklahoma

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

R. A. de Csipkes

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

Paper presented at the Annual Meeting of the American Educational Research Association, New York City, April 1977.

CG 011670

Abstract

This study investigates whether variations in method of presentation of anxiety items (experimenter's voice, experimenter's taped voice, subject's taped voice) will result in differences in autonomic arousal (as measured by self-report, galvanic skin response, cardiac rate blood pressure). Ss were 24 Naval Academy midshipmen. The procedure involved (1) training in deep muscle relaxation, and (2) measuring arousal following the presentation of anxiety-eliciting stimuli. Statistical analysis indicated that the influence of method of presentation was significant for galvanic skin response and self-reported anxiety. Comparison of cell means showed that verbal presentations were more effective in eliciting autonomic arousal than taped presentations. The results of this study provides partial evidence to support the conventional form of systematic desensitization as more effective than the newer automated or taped versions.

Systematic desensitization has shown itself to be effective in numerous experimental and clinical investigations as a method of treatment designed to help overcome fear reactions to specific objects or situations (Bandura, 1969; Wolpe, 1973). With its effectiveness having been well documented, the current trend in research appears focused upon delineating the most efficient and effective time and technique parameters (Karoly, 1974; Paul, 1966; Wolpe, 1973). One promising direction has been the use of tape-recorders. Recent research has indicated that tape-recorded instructions for relaxation training and for the presenting of standardized hierarchies have been effective in reducing anxieties associated with phobias (Denholtz, 1970; Donner and Guerney, 1969; Kahn and Baker, 1968; Lang, 1964; Migler and Wolpe, 1967). Although treatment successes have been demonstrated for tape-recorded desensitization, there had not been any research which investigates whether this modification has had any positive or negative effects upon the basic systematic desensitization paradigm.

The degree to which an individual is able to visualize the imaginal anxiety stimulus appears to be positively related to overall treatment effectiveness and the generalization of treatment effects to real life (Bandura, 1969; Sherman, 1973). Further, it

has been suggested that differences in degree of visualization could explain why social phobias are less responsive to desensitization than are focused fears (Lang et al., 1970). Since visualization does appear to be an important variable within the desensitization process, this study will examine whether tape-recorded presentations of anxiety hierarchy items has an effect on the subject's ability to imagine the stimuli (as measured by differences in autonomic arousal).

The present study is an investigation of whether variations in method of presentation of anxiety hierarchy items (experimenter's voice, experimenter's taped voice, subject's taped voice) will result in differences in degree of autonomic arousal.

Method

Subjects

The subjects were 24 second-year students at the United States Naval Academy. They were randomly selected from the total number (N= 236) of second-year students who had scored six to nine (range= 1 to 10) on the anxiety scale of the 16 Personality Factors Test (Cattell and Eber, 1964). The subjects were all males with a mean age of 19.

Instruments

(1) A reel to reel tape recorder, Wollensach model T 1600.

(2) A 20 minute progressive muscle relaxation training tape copied verbatim from Krumboltz and Thoresen (1969).

(3) A galvanic skin response amplifier, Model 201, Bio-Physical Research Instruments Corporation. This equipment was calibrated prior to and throughout the course of the study.

(4) A dual channel recorder, Model 301, Texas Instruments Corporation.

(5) A standard blood pressure cuff and manometer.

(6) A stethescope, modified with two additional feet of latex tubing (to facilitate measuring without disturbing the subject).

(7) A metal examining table with a 2 inch thick foam rubber pad. The table was adjusted in such a way that the subject's head would be supported in a slightly raised position.

Procedure

The research design employed in this study was the Simple Repeated Measures design (Kirk, 1968). Consequently, each subject was repeatedly exposed to each of the three levels of the treatment variable (experimenter's voice, experimenter's taped voice, subject's taped voice). Since it was thought that order of presentation of levels of the treatment variable would probably cause a confounding sequence effect, order was completely counterbalanced. The procedure required that the experimenter initially meet with the subjects in small groups and, then, later meet individually with each subject for two additional sessions.

Initial group session. Subjects were given an orientation concerning the study and were told what their participation

generally involved. Following this introductory briefing, the Fear Survey Schedule (Wolpe, 1973) was distributed to the members of the group; and they were instructed to fill it out. The purpose of this survey was to assist the experimenter in his task of identifying a relevant focused fear for each subject.

Initial individual session. At the beginning of this session, the experimenter and subject worked together to select and describe a stimulus item of moderate to high anxiety-eliciting potential associated with a previously designated focused fear. Once this was accomplished, the subject was asked to record that stimulus item on the tape recorder. The subject was then instructed to make himself comfortable on the table and was given taped instructions in deep muscle relaxation. Following this session and prior to the experimental session, the experimenter recorded the same stimulus item on the tape recorder.

Experimental session. Initially, the subject was asked to loosen any tight clothes, remove his shoes and make himself comfortable upon the examining table. At this point, the stethescope was fastened to the subject's chest with adhesive tape, so as not to disturb him once he had become relaxed. He was then given the taped instructions in deep muscle relaxation. While continuing to relax following the relaxation instructions, the subject was attached to the other physiological measuring devices (galvanic skin response electrodes were slipped onto the index and ring fingers of his left hand; the blood pressure cuff was wrapped around his left

arm). Once the subject had resumed a relaxed state (as evidenced by a flattened galvanic skin response reading), the subject was presented the first of three levels of the treatment variable. Following the presentation and while the subject was continuing to imagine the stimulus item, the experimenter measured the three indices of autonomic arousal. Galvanic skin response was measured concurrently with cardiac rate for a 30 second interval. Systolic blood pressure was measured last due to the active nature of its measurement procedure. Following this measurement, the subject was instructed to relax and concentrate on a pleasant and peaceful scene. The other two presentations were made in the same manner. After the final presentation, the subject was asked to rank order the three methods of presentation with regard to level of anxiety or vividness of image. Lastly, the subject was debriefed, thanked for his participation and dismissed.

Results

Following the collection of data, individual measures were compiled and assigned to their respective levels of the treatment variable. Direct interpretation of raw scores was possible for all measures, with the exception of galvanic skin response. For that measure, the data consisted of a continuous recording of level of conductivity over 30 second intervals (range= 0.0 to 1.0). In order to provide a more interpretable measure, the level of conductivity was measured at 3 second intervals and then summed.

Consequently, each galvanic skin response score constitutes a cummulative index resulting from the addition of 10 recorded levels within a 30 second interval (maximum score= 10.00). Table 1 represents the means and standard deviations (SDs) which were computed from the raw data.

Place Table 1 about here

Next, a two-way analysis of variance (mixed model) was performed on the physiological measures of autonomic arousal and, for galvanic skin response, yielded significant differences ($F= 4.42$, 2/46 df, $p < .05$). The differences in heart rate and systolic blood pressure were found to be non-significant ($F= .59$ and $F= .60$, respectively). Since the galvanic skin response differences were found to be significant, the Geisser-Greenhouse Conservative F test was used to correct for a possible liberal alpha level resulting from the Repeated Measures design (Kirk, 1968). Despite this reduced degrees of freedom and its higher F score, the galvanic skin response differences continued to be significant at the .05 level.

Post hoc comparisons of cell means were conducted using the Tukey method to determine the influence of the various methods of presentation on galvanic skin response. Table 2 indicates mean comparisons as a function of method presentation. This analysis found the comparison between presentation by experimenter's voice

and the subject's taped voice to be significant ($t = 4.19$, 3/69 df, $p < .05$). Neither of the other comparisons were statistically significant.

Place Table 2 about here

The analysis of the subjects' ranking of type of presentation according to the extent of perceived autonomic involvement was accomplished by using the Friedman two-way analysis of variance by ranks (Kirk, 1968). This nonparametric analysis indicated significant differences for the rankings ($X^2r = 6.71$, 2 df, $p < .05$). With this information and reference to Table 1, one is able to conclude that the experimenter's verbal presentation was ranked significantly more effective in inducing higher levels of self-reported anxiety than either of the taped presentations.

Discussion

These analyses appear to provide partial evidence for the enhanced effectiveness of actual verbal presentations of imaginal stimuli, in comparison to taped presentations, on the individual's ability to visualize that stimuli (as measured by degree of galvanic skin response). Two of the four indices of arousal employed in this study, i.e., galvanic skin response and self-report, were significantly influenced by variations of the treatment variable. More specifically, experimenter's verbal presentations of anxiety-eliciting stimuli resulted in greater levels on two indices of arousal than were found for the two

taped methods of presentation.

The results of this study appear to support the conventional form of systematic desensitization as more effective than the newer automated or taped versions. This study provides partial evidence that tape recorded presentations of anxiety hierarchy items are less effective than actual verbal presentations in eliciting autonomic responses to the stimuli. This decreased intensity of imagery could result in treatment failure, less generalization of treatment effects to real-life situations and may present specific problems in treating social fears. Although self-desensitization continues to be an appealing alternative due to certain practical considerations, such as reduction in amount of time spent with the client and subsequent increase in the number of clients that can be treated, these benefits seem to be accrued at a cost of apparent decreased effectiveness. According to the findings of this study, therapist presented imaginal stimuli is the more powerful and effective form of presentation and, given the relationship between intensity of imagery and successful desensitization, contributes to a more effective treatment package.

References

Bandura, A. Principles of Behavior Modification. New York: Holt, Rinehart & Winston, 1969.

Cattell, R. B., & Eber H. The 16 Personality Factor Test Manual, Form C. Champaign: Institute for Personality and Ability Testing, 1964.

Denholtz, M. S. The use of tape recorders between therapy sessions. Journal of Behavior Therapy and Experimental Psychiatry, 1970, 1, 139-143.

Donner, L., & Guerney, B. G. Automated group desensitization for text anxiety. Behavior Research and Therapy, 1969, 7, 1-13.

Kahn, M., & Baker, B. Desensitization with minimal therapist contact. Journal of Abnormal Psychology, 1968, 73, 198-200.

Karoly, P. Multicomponent behavioral treatment of fear of flying: A case report. Behavior Therapy, 1974, 5, 265-270.

Kirk, R. E. Experimental Design: Procedures for the Behavioral Sciences. Belmont: Brooks/Cole Publishing Company, 1968.

Krumboltz, J. D. & Thoresen, C. E. Behavioral Counseling: Cases and Techniques. New York: Holt, Rinehart & Winston, 1969.

Lang, P. J. Experimental studies of desensitization psychotherapy. In J. Wolpe, A. Salter & L. J. Reyna (Eds.), The Conditioning Therapies. New York: Holt, Rinehart & Winston, 1964.

Lang, P. J., Melamed, B. G., & Hart, J. A psychophysiological analysis of fear modification using an automated desensitization procedure. Journal of Abnormal Psychology, 1970, 76, 220-234.

Migler, B., & Wolpe, J. Automated self-desensitization: A case report. Behavior Research and Therapy, 1967, 5, 133-135.

Paul, G. L. Insight vs Desensitization in Psychotherapy: An Experiment in Anxiety Reduction. Stanford: Stanford University Press, 1966.

Sherman, A. R. Behavior Modification: Theory and Practice. Monterey: Brooks/Cole Publishing Company, 1973.

Wolpe, J. The Practice of Behavior Therapy, New York: Pergamon Press, 1973.

TABLE 1

Means and Standard Deviations (SDs) of Measures of Autonomic Arousal for Variations in Method of Presentation

	Method of Presentation[a]					
	EV		ET		ST	
Measure	Mean	SD	Mean	SD	Mean	SD
Galvanic Skin Response	2.93	2.67	2.08	2.71	1.41	1.36
Heart Rate	34.88	5.67	34.54	5.45	34.25	5.49
Blood Pressure	138.00	10.77	138.08	11.90	137.00	8.66
Self-Report	1.75	.80	2.21	.76	2.08	.70

[a]EV= experimenter's voice, ET= experimenter's taped voice, ST= subject's taped voice.

TABLE 2

Mean Galvanic Skin Response as a Function of Method of Presentation

Comparisons in Method of Presentation	
Experimenter's voice to Experimenter's taped voice	2.36
Experimenter's voice to Subject's taped voice	4.19*
Experimenter's taped voice to Subject's taped voice	1.83

*p < .05